

Executive Summary

This environmental impact statement (EIS) evaluates the environmental effects that could occur if specific projects designed to reduce wildfire hazard and risk are implemented. The projects would consist of vegetation management work in 105 defined project areas. One hundred of these areas are in a region informally known as the East Bay Hills, and the remaining five areas are in Miller/Knox Regional Shoreline, a facility of the East Bay Regional Park District (EBRPD) on San Francisco Bay.

As used in this EIS, the term East Bay Hills refers to a series of ridges east of San Francisco Bay that begin on the east side of Interstate 80 in Richmond and run southeast to Lake Chabot. The East Bay Hills contain many densely built residential neighborhoods of mostly single-family homes but also include large tracts of open space and wildlands managed by EBRPD; the University of California, Berkeley (UCB); the City of Oakland (Oakland); and the East Bay Municipal Utilities District.

Vegetation management work in 60 of the 105 project areas was proposed in four grant applications submitted to the Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) by EBRPD, UCB, and Oakland through the California Office of Emergency Services (Cal OES). The four applications are described in Section ES.1 below. In addition to the vegetation management work proposed for FEMA funding, some work proposed within the project areas may be funded by other agencies. Some of this additional work includes activities that are not eligible for FEMA funding, such as the pile burning and area burning proposed by EBRPD. In this EIS, the combination of vegetation management activities proposed for FEMA funding (the grant applications) and the activities proposed to be funded by others on the 60 project areas is identified as the proposed action.

The remaining 45 project areas are adjacent or nearby areas in which EBRPD plans to do similar vegetation management work. This EIS refers to these 45 additional areas as connected project areas. Vegetation management work in the 45 connected project areas is needed to reduce wildfire hazard in the targeted built environment and it works in concert with the proposed project areas. Although not funded by FEMA, these connected project areas are included in the EIS analysis in combination with the proposed project areas because both areas need to be treated to provide effective protection over a vulnerable wildland-urban interface and achieve substantial reductions in hazardous fire risk.

EBRPD's proposed and connected project areas are identified in EBRPD's Wildfire Hazard Reduction and Resource Management Plan (EBRPD 2009b). The proposed vegetation management work included in EBRPD's grant application is intended to reduce fire hazard in areas that are particularly vulnerable to wildfire or are particularly in need of protection.

The proposed action would be implemented on land owned by UCB and Oakland and within 11 parks owned and maintained by EBRPD. Figure ES-1 shows the proposed and connected project areas in the context of the East Bay region.

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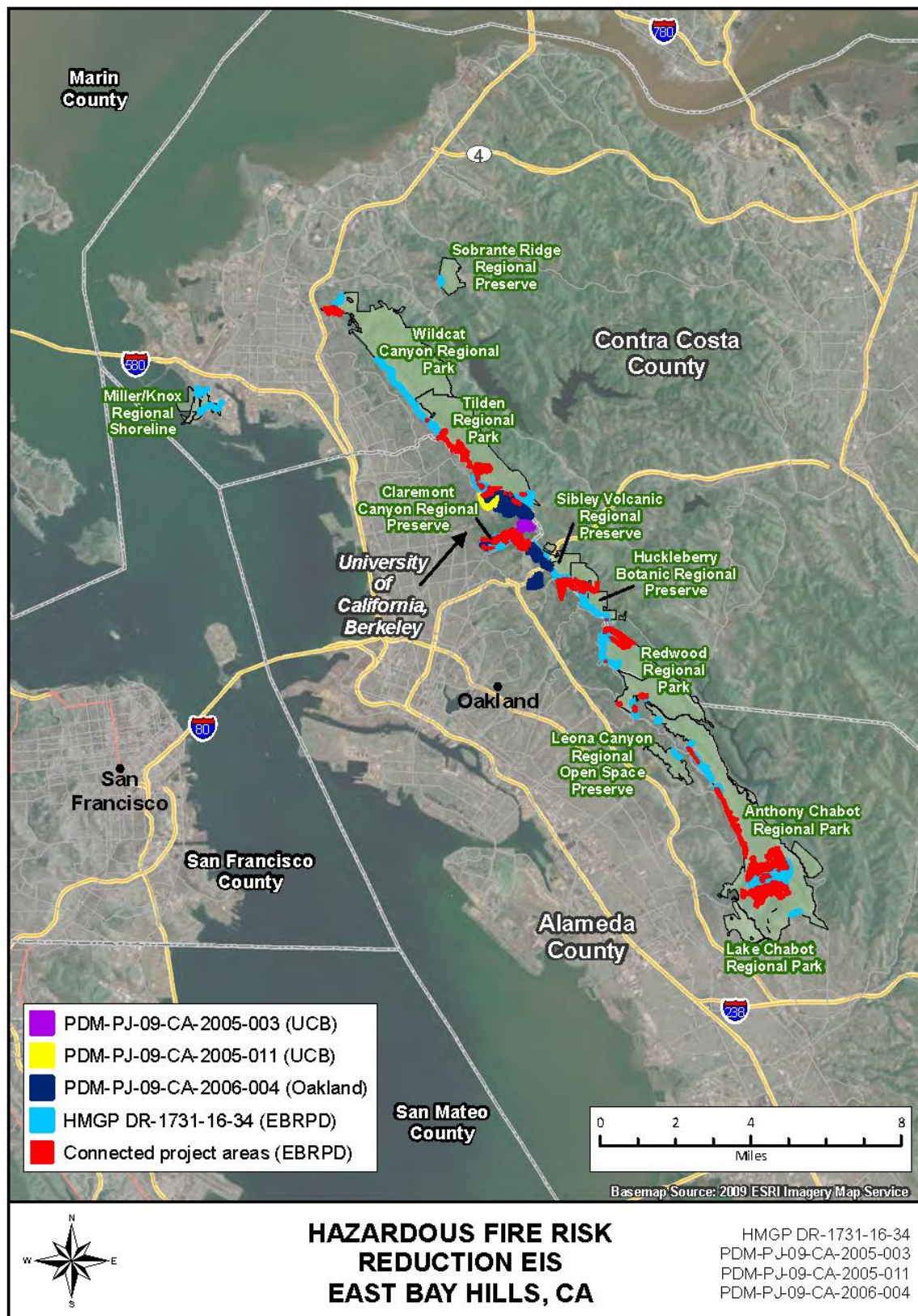


Figure ES-1. Proposed and Connected Project Areas

ES.1 The Grant Applications

UCB, Oakland, and EBRPD submitted a total of four grant applications to FEMA through Cal OES for federal financial assistance to implement hazardous fire risk reduction projects in the East Bay Hills of Alameda and Contra Costa counties, California, and at the Miller/Knox Regional Shoreline in Contra Costa County. Cal OES is the official applicant and UCB, Oakland, and EBRPD are subapplicants. The funding sought in the four grant applications would be provided under FEMA's Pre-Disaster Mitigation (PDM) program and Hazard Mitigation Grant Program (HMGP).

The PDM program provides funds to states, territories, Indian tribal governments for hazard mitigation planning and implementation of mitigation projects. Funding these plans and projects reduces overall risks to people and structures while reducing reliance on funding connected with disaster declarations.

The HMGP provides funds to states, territories, Indian tribal governments, local governments, and eligible private non-profits to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce loss of life and property due to natural disasters and to enable implementation of mitigation measures during recovery from a disaster.

Table ES-1 lists the subapplicants, application numbers, and acreage for the proposed hazardous fire risk reduction projects. The proposed action, the connected actions, and alternatives are described in Section ES.7.

Table ES-1. Subapplicants, Application Numbers, and Acreage for the Proposed Hazardous Fire Risk Reduction Projects (Proposed Action)

Subapplicant	Application Number	Acreage⁽¹⁾
UCB	Strawberry Canyon PDM-PJ-09-CA-2005-011	56.3
	Claremont Canyon PDM-PJ-09-CA-2005-003	42.8
Oakland	PDM-PJ-09-CA-2006-004	359.0
EBRPD	HMGP 1731-16-34	540.2
Total		998.3

⁽¹⁾ Acreages were identified using information by the subapplicants and geographic information system (GIS) software.

CA = California

EBRPD = East Bay Regional Park District

HMGP = Hazard Mitigation Grant Program

Oakland = City of Oakland

PDM = Pre-Disaster Mitigation

PJ = Project

UCB = University of California, Berkeley

ES.1.1 UCB

UCB submitted two grant applications under the PDM program: one for a 56.3-acre area designated Strawberry Canyon-PDM in this EIS and one for a 42.8-acre area designated

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Claremont-PDM. To reduce the potential for these areas to support and spread wildfires, UCB proposes to remove eucalyptus, Monterey pine, and other trees that are prone to torching. Oak and bay trees and other native vegetation present under the larger non-native trees would be preserved and encouraged to expand. UCB would take this same general approach in the proposed Frowning Ridge-PDM project, which is included in Oakland's grant application (see Section ES.1.2 below).

ES.1.2 Oakland

Oakland submitted an application under the PDM program for six projects in Alameda County near the Contra Costa County border. The projects would be implemented by Oakland, UCB, and EBRPD. The six projects are Oakland's North Hills-Skyline-PDM and Caldecott Tunnel-PDM projects; UCB's Frowning Ridge-PDM project; and EBRPD's Tilden Regional Park-PDM (Tilden-Grizzly), Sibley Volcanic Regional Preserve-PDM (Sibley Triangle and Island), and Claremont Canyon-PDM (Claremont Canyon-Stonewall) projects. These six project areas total 359.0 acres. In its North Hills-Skyline and Caldecott Tunnel projects, Oakland would seek to remove eucalyptus and other trees that are prone to torching, preserve native trees and give them room to grow, and create a fuel break on the west side of Grizzly Peak Boulevard north and east of the Caldecott Tunnel.

ES.1.3 EBRPD

EBRPD submitted an application under the HMGP for reduction of fuel loads on 540.2 acres in 11 regional parks: Anthony Chabot Regional Park, Claremont Canyon Regional Preserve, Huckleberry Botanic Regional Preserve, Lake Chabot Regional Park, Leona Canyon Regional Open Space Preserve, Miller/Knox Regional Shoreline, Redwood Regional Park, Sibley Volcanic Regional Preserve, Sobrante Ridge Regional Preserve, Tilden Regional Park, and Wildcat Canyon Regional Park. EBRPD would reduce fuel loads primarily by promoting conversion of dense scrub, eucalyptus forest, and non-native pine forest to grassland with islands of shrubs. Oak and bay trees would be preserved. EBRPD would take this same general approach in the three proposed EBRPD projects included in Oakland's grant application (see Section 1.1.2 above).

ES.2 Lead and Cooperating Agencies

FEMA is the lead federal agency for preparation of this EIS. Other local, state, and federal agencies are involved in the EIS process because they have special expertise in or knowledge of environmental issues, they have jurisdiction by law, or they must approve a portion of the proposed action.

FEMA invited the U.S. Forest Service (USFS), the National Park Service (NPS), the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), Cal OES, UCB, Oakland, and EBRPD to be cooperating agencies, and all accepted. FEMA and the cooperating agencies executed a memorandum of understanding to govern their working relationship for preparation of this EIS. The memorandum of understanding is in Appendix J.

ES.3 Environmental Review Requirements

FEMA's involvement in the hazardous fire risk reduction projects triggers the requirements of the National Environmental Policy Act (NEPA (42 U.S. Code [U.S.C.] §§ 4321–4347), which include an evaluation by federal agencies of the potential environmental impacts of proposed actions and a consideration of the impacts during the decision-making process. FEMA prepared this EIS in accordance with the Council on Environmental Quality's (CEQ's) NEPA implementing regulations in Title 40 Code of Federal Regulations (CFR) Parts 1500 through 1508, FEMA's NEPA procedures in 44 CFR Part 10, and DHS Directive and Instruction 023-01, "Implementation of the National Environmental Policy Act."

ES.4 Scope of this EIS

FEMA determined that all proposed vegetation management work in the 60 project areas included in the four grant applications should be assessed in the same EIS. This determination is based on the proximity of the project areas to each other and the potential for cumulative impacts (see 40 CFR § 1508.25). In this EIS, the work proposed in the 60 areas is called the proposed action. FEMA concluded that the proposed action and additional hazardous fire risk reduction projects planned by EBRPD are interdependent parts of an overall hazardous fire risk reduction program designed to create a fuel break at the interface between the developed and undeveloped portions of the East Bay Hills. The additional projects planned by EBRPD are connected to the proposed action; therefore, they are addressed in this EIS.

The selection of topics addressed in the EIS was based on concerns raised during public scoping (see Section 1.6) and on regulatory and FEMA policy requirements. The topics were reviewed again following the public review of the draft EIS. These issues involve resources that could be beneficially or adversely affected by the proposed and connected actions. Impact topics include:

- Biological Resources
- Fire and Fuels
- Geology, Seismicity, and Soils
- Water Resources
- Air Quality
- Climate and Microclimate
- Historic Properties
- Aesthetics and Visual Quality
- Socioeconomics
- Human Health and Safety
- Public Services, Infrastructure, and Recreation
- Land Use and Planning
- Transportation
- Noise

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ES.5 Public Involvement

In January 2008, FEMA published a Notice of Availability for a Draft Environmental Assessment (EA) on the Strawberry Canyon project area for public comment (FEMA 2007). That EA addressed the Strawberry Canyon-PDM vegetation management project as proposed in UCB's grant application PDM-PJ-09-CA-2005-011. The public involvement process revealed concerns regarding the effectiveness and scope of the proposed vegetation removal methods, the proposed application of wood chips in portions of the project area, impacts to plant and animal species in the project area, and potential cumulative impacts of all projects in the project area.

Based on the findings of that EA, FEMA (and after consulting with DHS, CEQ, Cal OES, and the subapplicants) decided to prepare an EIS. This EIS addresses the potential environmental impacts of the vegetation management projects proposed in all of the grant applications submitted by UCB as well as those submitted by Oakland and EBRPD.

The public scoping process required by 40 CFR § 1501.7 was completed for the proposed action. A notice of intent to prepare an EIS for the proposed action was published in the *Federal Register* on June 10, 2010. The notice of intent initiated a public scoping period that concluded on October 1, 2010. FEMA conducted two public scoping meetings in August 2010 to solicit input from the public about the environmental topics to be included in the EIS and the issues to be analyzed in depth. The areas of concern and the types of comments received during scoping are described in the Scoping Report in Appendix K.

A Notice of Availability of the draft EIS was published in the *Federal Register* on May 3, 2013, and the public comment period extended from May 3, 2013 to June 17, 2013. FEMA held three public meetings near the project area and received over 13,000 comment submittals on the project during the public comment period via letter, email, fax, petitions, comments submitted at the public meetings, and voicemail.

This final EIS contains two new appendices related to the public review of the draft EIS: Appendix Q, which provides responses to comments received on the draft EIS and Appendix R, which presents the comment submittals that were received during the public comment period on the draft EIS. Comments that were received during the draft EIS comment period are addressed in this final EIS. Section 7 describes the EIS public outreach and involvement process and its results.

ES.6 Purpose and Need

The purpose of the project is to substantially reduce hazardous fire risk to people and structures in the East Bay Hills and the vicinity of Miller/Knox Regional Shoreline. Reduction of hazardous fire risk would reduce the need for future disaster relief and the risk of repetitive suffering and damage.

The four grant applications addressed in this EIS were submitted under FEMA's PDM and HMGP programs. The purpose of the proposed project is consistent with the purpose of these programs. FEMA approval of the grant applications submitted to Cal OES by the subapplicants under the PDM and HMGP programs would serve the project's purpose.

The need for the project arises from the severe and repetitive nature of wildfires in the East Bay Hills area and the proximity of residential areas to open spaces that are susceptible to fires. Fire hazard severity mapping prepared by the California Department of Forestry and Fire Protection (Cal Fire) indicates that most of the undeveloped areas in the East Bay Hills are in the very high fire hazard severity zone—the zone where wildfire hazard is most severe (Cal Fire 2007a, 2007b, 2008, 2009b). Several factors contribute to this very high fire hazard. The East Bay Hills and the vicinity of Miller/Knox Regional Shoreline have a hot and dry fall season, wind-conductive topography, flammable vegetation, dense development, and limited accessibility for firefighting. The East Bay Hills are subject to hot, dry winds from the northeast that can drive a wildfire from the regional parks and other open space areas into residential areas. Miller/Knox Regional Shoreline is subject to winds from San Francisco Bay that can drive a wildfire into residential areas adjacent to the park.

Between 1923 and 1992, 15 major wildfires occurred in the East Bay Hills (Hills Emergency Forum 2010). Eight were driven by east winds, known locally as Diablo winds, and seven were driven by west and southwest winds. The 15 fires burned a total of almost 9,000 acres, destroyed approximately 4,000 homes, and killed 26 people. One of the fires, the 1923 Berkeley Fire, destroyed more than 550 homes in a few hours. A fire in 1970 consumed more than 200 acres and burned 37 homes. The 1991 Tunnel Fire killed 25 people, destroyed more than 3,000 homes, and did an estimated \$1.5 billion in damage (Cal OES 1992).

All of the proposed project areas in the application submitted by Oakland and the two applications submitted by UCB are in areas mapped by Cal Fire as very high fire hazard severity zones (Cal Fire 2008). Of EBRPD's 48 proposed project areas, 39 and part of a 40th are in very high fire hazard severity zones (Cal Fire 2007a, 2007b, 2008, 2009). Of EBRPD's 45 connected project areas, 42 and part of a 43rd are in very high fire hazard severity zones. EBRPD selected its proposed and connected project areas based on multiple factors including the following (EBRPD 2009b):

- Degree of fire hazard
- Proximity to facilities requiring defensible space
- Need to provide firefighter safety zones and to protect areas critical for firefighting operations
- Need to maintain areas where fuel reduction has been performed previously

Based on the wildfire hazard characteristics of the East Bay Hills and the Miller/Knox Regional Shoreline, FEMA concluded that a need exists to reduce hazardous fire risk to people and structures in these areas. FEMA proposes to address this need by providing financial assistance to the subapplicants through the PDM and HMGP programs for long-term, cost-effective fuel reduction measures to reduce risk of loss of life and damage to vulnerable structures from wildfire.

ES.7 Alternatives

Identifying and analyzing alternatives is an essential part of the NEPA decision-making process. As part of the alternatives analysis, preliminary alternatives are identified. The ability of these

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alternatives to meet the project purpose and need is considered. Some alternatives are eliminated from further consideration and the remaining alternatives are studied in detail.

FEMA considered five preliminary alternatives:

1. The proposed action
2. No action, which involves denying the grant applications
3. Funding the grant applications with conditions to address their environmental impacts
4. Funding the grant applications with fuel reduction methodologies that are different than as proposed by the applicants
5. Partially funding the grant applications, including funding some grant projects and denying others (*Federal Register* 2010)

All five preliminary alternatives were assessed against the criteria for meeting the purpose and need and against the comments received during scoping. FEMA determined that the alternative *Funding the Grant Applications with Conditions to Address Their Environmental Impacts* was actually the proposed action as it would evolve through the EIS process. Therefore, this alternative was dismissed as a separate alternative. The alternative *Partially Funding the Grant Applications, Including Funding Some Grant Projects and Denying Others* was determined to not be a separate alternative, but a decision that FEMA could choose to make based on the findings of the EIS process. Therefore, it was also eliminated as a separate alternative. The preliminary alternative *Funding the Grant Applications With Fuel Reduction Methodologies That Are Different Than as Proposed by the Applicants* was eliminated because the alternative methodologies FEMA considered either were not significantly different from the proposed methodologies or were not likely to meet the purpose and need. Although a substantial number of comments were received on the proposed and connected actions as described in the draft EIS, the public comments did not present alternatives to meet the purpose and need that were not previously considered during scoping. Alternative methodologies considered but eliminated from further study are discussed in Section 3.3 of the EIS.

The following alternatives were analyzed in detail:

- No action alternative
- Proposed and connected actions

Although the no action alternative was the only alternative to the proposed and connected actions that was carried forward for additional study, FEMA can still require modification of the proposed and connected actions as a condition of funding the grant applications. Any modifications required by FEMA will be included in FEMA's Record of Decision on the proposed and connected actions.

ES.7.1 No Action Alternative

Under this alternative, FEMA would not fund any of the proposed grant applications, which are part of the proposed actions, and those activities would not be implemented. UCB would

continue annual removal of grass and light, flashy fuels (such as twigs, needles, and grasses that ignite and burn rapidly) from UCB roadsides, UCB turnouts, and within 100 feet of UCB structures and adjacent private residences. UCB would also work to maintain the strategic areas where fuel reduction projects have been completed during the past 10 years to ensure continued eradication of target species of vegetation that have already been removed. UCB would continue to pursue fuel reduction within 30 feet of private and public structures to create defensible space in accordance with its 2020 Hill Area Fire Fuel Management Program. Oakland would continue to conduct basic fire reduction activities including removal of hazardous vegetation from roadsides. EBRPD would continue to maintain areas where vegetation reduction has already been completed.

EBRPD is already implementing elements of the connected actions using funds from sources other than FEMA and vegetation management activities similar to those proposed in the grant applications are ongoing on EBRPD properties. However, because the greatest hazardous fire risk reduction benefits would only accrue if both the proposed and connected actions are implemented, hazardous fire risk reduction is not considered an effective outcome of the no action alternative; therefore, this alternative does not meet the purpose and need.

ES.7.2 Proposed and Connected Actions

The proposed action consists of the vegetation management work included in the four grant applications listed in Table ES-1, plus additional vegetation management proposed in the same areas but not eligible for FEMA funding. This EIS also addresses vegetation management projects planned by EBRPD in many connected areas, as explained in Section ES.4. The proposed and connected project areas are summarized in Table ES-2.

Table ES-2. Summary of Proposed and Connected Project Areas

Project Area	Proposed Action Acres	Connected Action Acres	Total Acres
UCB			
Strawberry Canyon-PDM	56.3	0	56.3
Claremont-PDM	42.8	0	42.8
Subtotal	99.1	0	99.1
Oakland			
North Hills-Skyline-PDM	68.3	0	68.3
Caldecott Tunnel-PDM	53.6	0	53.6
Frowning Ridge-PDM (UCB project)	185.2	0	185.2
Tilden Regional Park-PDM (EBRPD project)	34.3	0	34.3
Sibley Volcanic Regional Preserve-PDM (EBRPD project)	3.9	0	3.9
Claremont Canyon-PDM (EBRPD project)	13.7	0	13.7
Subtotal	359.0	0	359.0
EBRPD			
Sobrante Ridge Regional Preserve	4.1	0	4.1
Wildcat Canyon Regional Park	65.6	46.6	112.2
Tilden Regional Park	97.7	194.2	291.9
Claremont Canyon Regional Preserve	21.6	130.4	152.0
Sibley Volcanic Regional Preserve	43.6	118.4	162.0

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Project Area	Proposed Action Acres	Connected Action Acres	Total Acres
Huckleberry Botanic Regional Preserve	17.8	0.3	18.1
Redwood Regional Park	58.4	92.8	151.2
Leona Canyon Regional Open Space Preserve	4.6	0	4.6
Anthony Chabot Regional Park	200.0	478.2	678.2
Lake Chabot Regional Park	4.8	0	4.8
Miller-Knox Regional Shoreline	22.2	0	22.2
Subtotal	540.2	1,060.7	1,600.9
TOTAL	998.3	1,060.7	2,059.0

The vegetation management proposed for several project areas in the UCB and Oakland applications has been modified since the draft EIS to implement a unified methodology that is more consistent with the methodology described in the EBRPD grant application. This unified methodology and the subareas it would be applied to are described in Section ES 7.2.1.

The proposed and connected actions involve removing fire-prone trees and vegetation to reduce wildfire hazard. Targeted trees would be cut down and processed consistent with the California Forest Practice Rules.

In general, work would be conducted from August through November to avoid impacts to migratory birds, federally listed species, and sensitive species, and to minimize impacts on soils and water quality. The proposed and connected actions would include best management practices identified by the San Francisco Bay Regional Water Quality Control Board to control erosion during and after vegetation management activities (see Section 5.3.2.3).

The proposed and connected actions involve use of herbicides both during the initial treatment and during the maintenance phase. Herbicides would only be applied by a licensed State of California Qualified Applicator or by staff under their supervision and in accordance with conditions identified to protect listed and sensitive species and aquatic areas. The conditions under which herbicides may be applied are described in Sections 5.1 and 5.10.

The development of mitigation and monitoring plans (MMPs) are a requirement of grant funding, and they would outline the mitigation, monitoring, and maintenance activities to be conducted over the 10-year duration of the project. Maintenance activities are included in the analysis of effects.

Monitoring would be conducted annually, and the results would be addressed in an annual report, submitted to appropriate agencies, including the USFWS, by March 31 of each year. The reports would include a summary of the maintenance and monitoring activities, recovery, percent cover of federally listed species habitat, measures implemented at each site to aid in the recovery of the habitat towards the vegetation management goal outlined in the plan, and a summary of the proposed follow-up action for the upcoming year.

ES.7.2.1 Application of Unified Methodology

The fuels reduction methodology presented in the draft EIS was revised to more closely align implementation of the project with the purpose and need and in response to a number of public comments received on the draft EIS. This unified methodology was developed in coordination with the subapplicants to apply the methods and approaches described for EBRPD on the UCB and Oakland project areas.

The unified methodology would be applied to portions of four of the treatment areas discussed below: Strawberry Canyon (UCB), Claremont Canyon (UCB), North Hills-Skyline (Oakland), and Caldecott Tunnel (Oakland). The subareas where the unified methodology would be applied were identified as high fire risk sections of the project area that are in close proximity to structures. These areas were identified as places where the unified methodology would allow for wildfire hazard reduction that is equivalent in its effectiveness as the previous approach. In these areas, there would be a greater emphasis on thinning rather than complete removal in order to achieve the fire risk reduction goals.

This vegetation management approach will result in fewer trees removed in any single year but the same total fuels reduction would be accomplished by the conclusion of the project. The proposed herbicides, application rates, and best management practices (BMPs) are the same as previously described; although, the acreage treated in any one year may be less than previously described. All treatment would still occur over the 10-year time frame. There would be no change in the total area treated or in the location of the treatment areas.

Table ES-3 summarizes the acreage of each project area where the unified methodology would be employed compared to the total area of each project area.

Table ES-3. Unified Methodology Subarea Acres

Project Area	Total Polygon Area (acres)	Unified Methodology Subareas (acres)
Strawberry Canyon PDM	56.3	12.4
Claremont-PDM	42.8	9.7
North Hills-Skyline (Oakland)	68.3	3.5
Caldecott Tunnel Ballfields	53.6	2.9

ES.7.2.2 UCB

The UCB grant application includes two project areas in which approximately 22,000 trees would be cut down, including most eucalyptus, Monterey pine, and acacia trees. The focus under the unified methodology would be to remove high-volume vegetation and create discontinuity in the fuel so that the rate of fire spread is slowed and that flame lengths meet the project goal. The unified methodology would be applied to three subareas of the Strawberry Canyon project area and to two subareas of the Claremont project area.

Felled trees up to approximately 24 inches in diameter at breast height (DBH) would be cut up into chips 1 to 4 inches long and the chips would be spread on up to 20% of each site to a maximum depth of 24 inches. UCB expects the chips to largely decompose within 5 years.

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Branches from trees greater than 24 inches DBH would be cut up and scattered on the site (lopped and scattered). The trunks of these trees would typically be cut into 20- to 30-foot lengths. Some tree trunks would be placed to help control sediment and erosion or support wildlife habitat. Some tree trunks may be moved to an adjacent portion of the hillside or shipped for use as fuel, a source of paper pulp, or horse bedding.

Three temporary access roads are anticipated to be required for the proposed Claremont-PDM project. The three roads would be 12 feet wide and total approximately 2,600 feet long.

Under the unified methodology, completion of the initial vegetation reduction work is expected to require up to 40 weeks spread over 3 to 5 years. Maintenance would continue for up to 10 years after initial vegetation removal.

ES.7.2.3 Oakland

Oakland's grant application (PDM-PJ-09-CA-2006-004) includes six proposed project areas in which vegetation management work would be done by three property owners: Oakland, UCB, and EBRPD. Oakland owns the 68-acre North Hills-Skyline-PDM and the 54-acre Caldecott Tunnel-PDM, and UCB owns the 185-acre Frowning Ridge-PDM. EBRPD owns the 34-acre Tilden Regional Park-PDM, the 3.9-acre Sibley Volcanic Regional Preserve-PDM, and the 14-acre Claremont Canyon Regional Preserve-PDM. EBRPD's approach to vegetation management work is summarized in Section ES.7.2.4.

Under the unified methodology, trees would be thinned and understory removed in the first entry to the stand in some locations, and in other locations larger areas of trees would be removed as previously described in the draft EIS.

ES.7.2.3.1 North Hills-Skyline-PDM

This 68-acre proposed project area is on the southwest side of Grizzly Peak Boulevard north of State Route (SR) 24 and above the Caldecott Tunnel. It includes eucalyptus, pine, and brush. The proposed action would extend the fuel break created by previous UCB and EBRPD projects. The long-range goals would be to remove eucalyptus and Monterey pine across the entire ridgeline and to convert brush to grassland at Grizzly Flats to create a ridgeline fuel break. In the southeastern portion of the proposed project area, removal of eucalyptus would promote emergence of a native forest of California bay, oak, maple, buckeye, and hazelnut, which produce smaller amounts of fuel. The unified methodology would be applied to five subareas of the North Hills-Skyline project area.

The site would be accessed from pullouts along Grizzly Peak Boulevard, Tunnel Road, and Skyline Boulevard. No new access roads would be created. Eucalyptus would be chipped and the chips would be spread over a maximum of 20% of the site at a maximum depth of 24 inches. The site burned intensely in the 1991 Tunnel Fire, so few if any eucalyptus on the site are too large to chip. Monterey pines would be cut up and scattered on the site.

ES.7.2.3.2 Caldecott Tunnel-PDM

The 54-acre Caldecott Tunnel-PDM proposed project area is on the east side of Broadway and SR 24, south of the southwestern end of the Caldecott Tunnel. Eucalyptus trees in the northern portion of the site produce large amounts of flammable debris and prevent development of understory vegetation. Other portions of the site contain oak-bay woodlands, mesic north coastal scrub, and a disturbed area containing a parking lot and ballfields. The unified methodology would be applied to two subareas of this project area.

Proposed activities are limited to the dense eucalyptus stands. Oakland's goal for Caldecott-PDM is to achieve fire risk reduction and an 8-foot flame length within 100 feet of structures. Eucalyptus would be chipped and the chips would be spread on up to 20% of the site with a maximum depth of 24 inches. The site burned intensely in the 1991 Tunnel Fire, so few, if any, eucalyptus on the site are too large to chip.

ES.7.2.3.3 Frowning Ridge-PDM

UCB owns the 185-acre Frowning Ridge proposed project area. The proposed action included removal of fire-prone vegetation including all eucalyptus, Monterey pine, and acacia. The goal of this project is to reduce the amount of fuel on the site by allowing the eucalyptus- and pine-dominated forest to convert to a forest of California bay laurel, oak, and native grass and shrub species, which are currently present beneath the fire-prone trees. The bay laurel and oak species would provide less fuel for potential wildfires and are less prone to torching than other tree species. Portions of the site would convert to coastal scrub or coyote brush scrub.

The EIS evaluates the original proposal to remove approximately 32,000 eucalyptus and pine trees. The same procedures described in Section ES.7.2.2 above would be used for tree removal, management of cut material, suppression of resprouting from stumps, and suppression of seedlings. UCB anticipated that one additional temporary access road approximately 200 feet long and 12 feet wide would be needed, and that earth moving would occur along the entire length of the temporary road. Completion of the proposed vegetation removal at Frowning Ridge-PDM was expected to require 40 to 60 weeks spread over 2 to 3 years.

Work completed in August 2014 is not included in the analysis. See ES.8 for an explanation of the implications of this work on eligibility for grant funding.

ES.7.2.4 East Bay Regional Park District

EBRPD's grant application proposes fuel reduction measures on 540.2 acres in eleven regional parks. Oakland's grant application proposes fuel reduction measures that EBRPD would execute on 51.9 acres in three of the same 11 parks. This EIS also addresses connected hazardous fire risk reduction measures planned by EBRPD on 1,060.7 acres in seven of the same 11 parks.

EBRPD intends to reduce fuel load and fuel sources by reducing the density of fire-prone plant species within the proposed and connected project areas. EBRPD would accomplish this through implementation and long term maintenance of tree and brush removal (mechanical and hand), herbicide treatment, and, although not funded by FEMA, animal grazing, pile burning, and broadcast burning.

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ES.7.2.4.1 General Vegetation Management Goals

The majority of the vegetation management work would focus on reducing the amount of fire-promoting species of trees and shrubs such as eucalyptus, Monterey pine, acacia species, and French broom. French broom is a major component of coastal scrub. Selective removal and reduction of native shrubs such as coyote brush and sage would be implemented to further reduce fuel sources for fire.

EBRPD would seek to increase the amount of successional grassland, which is grassland with islands of shrubs. Vegetation such as oak-bay woodland would be protected and promoted through reduction of eucalyptus, pine and acacia. To further reduce fuel available to a wildfire, woody debris would be removed from oak-bay woodlands and low branches would be removed. In areas where oaks and bays are overly dense, these trees may be thinned, favoring retention of healthy, larger oaks and bays to increase the fire resilience of the residual stand. Native redwood forests would be left as they are.

Brush would be thinned to reduce the amount of fuel available to a fire and to create gaps in the available fuel. Brush habitat would be maintained and increased in quality where possible.

Perennial and annual grasses would be managed to maintain open grassland habitat, reduce brush encroachment, increase native species diversity, reduce fuel loads, and maintain travel corridors for native wildlife. Aquatic, wetland, and riparian habitat would be managed to protect and encourage expansion of these habitats. Measures would be implemented to prevent erosion or sedimentation into these habitats.

ES.7.2.4.2 Vegetation Management Methods

EBRPD's vegetation management methods are based on its Wildfire Hazard Reduction and Resource Management Plan (EBRPD 2009). The plan recommends selective thinning of areas dominated by species that contribute fuel to wildfires.

In most cases, desirable vegetation growing beneath eucalyptus would be protected and promoted to replace eucalyptus over time. Logs would be placed and retained as a component of the sediment and erosion control measures, to improve wildlife habitat, and to promote long-term soil productivity. Trees would be removed from the project areas or, in some cases, chipped and left on-site. Wood chips left on-site would be limited to a depth of 4 to 6 inches and would cover no more than 20% of each project site. In addition, although not funded under the HMGP, pile burning and in a few cases area burning would be used under prescribed and permitted conditions to dispose of some of the cut woody material.

Trees within 50 feet of the high water mark of a continuous or intermittent stream would be cut using hand-held equipment. No self-propelled equipment used for either removal or processing of vegetation would enter the 50-foot buffer.

ES.8 Environmental Consequences

Table ES-4 summarizes the conclusions of the EIS regarding the environmental effects of the proposed and connected actions and the no action alternative.

Table ES-4. Summary of Potential Effects

Resource Category	No Action Alternative	Proposed and Connected Actions
Biological Resources	Greater potential for large and intense wildfire and resulting destruction of vegetation, wildlife, and wildlife habitat. Continued spread of invasive non-native vegetation in the project areas.	<p>Cutting of large amounts of non-native, invasive vegetation and some native vegetation. Short-term, unavoidable, adverse effect.</p> <p>Potential significant, short-term, adverse impact on common wildlife species disrupted during implementation and until vegetation communities recover.</p> <p>Improved conditions for preserved native vegetation and improved conditions for native wildlife that benefits from native habitat over long-term. Significant, long-term, beneficial effect.</p> <p>Potential damage to wildlife including the endangered California red-legged frog and the threatened Alameda whipsnake, potential damage to wildlife habitat including critical Alameda whipsnake habitat, and potential damage to nontargeted vegetation including the endangered Presidio clarkia and the threatened pallid Manzanita by heavy equipment, tree skidding, and application of herbicides, minimized by mitigation measures and best management practices. Not significant with mitigation measures and use of BMPs.</p> <p>Enhancement of Alameda whipsnake habitat. Significant beneficial effect.</p> <p>Improvement of growing conditions for pallid manzanita, a threatened plant. Significant beneficial effect.</p>
Fire and Fuels	Greater potential for large and intense wildfire.	Significantly reduced potential for severe wildfire. Significant beneficial effect.
Geology and Seismicity	No effect	No effect
Soils	<p>Greater potential for large and intense wildfire and resulting soil erosion and increased risk of landslides.</p> <p>Greater potential for destruction of organic matter in soil during an intense wildfire.</p>	<p>Increased potential for soil erosion and landslides during and after implementation, mitigated by best management practices including erosion control and not using heavy equipment in mapped landslide areas. Not significant with mitigation measures and use of BMPs.</p> <p>Temporary reduction of soil productivity caused by wood chips blocking light and by nitrogen demand exerted by decomposing chips. Use of woodchips is a BMP for prevention of soil erosion and protection of water quality. Unavoidable, adverse, short-term effect limited to less than 20% of project area; not significant.</p>

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Resource Category	No Action Alternative	Proposed and Connected Actions
Water Resources	Greater potential for sedimentation of streams and water bodies following a wildfire.	Potential for sedimentation of streams and water bodies during and after implementation, mitigated by erosion and sedimentation control measures. Not significant with mitigation and use of BMPs. Potential for herbicides to reach streams and water bodies in stormwater runoff, minimized by best management practices and use restrictions near water. Not significant with mitigation measures and use of BMPs.
Air Quality	Greater amount of air pollution during a wildfire.	Potential for air pollution during pile burning and broadcast burning of cut vegetation, including carbon monoxide emissions; although, not expected to exceed the California Air Resources Board <i>de minimis</i> threshold for general conformity. Insignificant adverse effect.
Climate and Microclimate	Greater potential for major production of carbon dioxide during a wildfire.	Creation of carbon dioxide during pile burning of cut vegetation and broadcast burning in a few project areas. Insignificant adverse effect. Shorter growing season along ridge tops where trees would be cut because of decreased fog-drip in summer. Insignificant adverse effect. Increased ground-level wind speed downwind of ridgelines caused by cutting of ridgeline trees. Insignificant adverse effect.
Historic Properties	Greater potential for destruction of historic properties during a wildfire.	No effect
Aesthetics and Visual Quality	Greater potential for severe aesthetic impact caused by wildfire.	Significant adverse visual impact at two places in Tilden Regional Park, near Selby Trail and the merry-go-round. Unavoidable, short-term, adverse effect would lessen over time as vegetation recovers.
Socioeconomics	Greater potential for devastating impact to residential communities and businesses during wildfire.	Significant, short-term, adverse alteration of community character to neighborhoods at NW corner of Strawberry Canyon-PDM and at Glen Highlands SE of Caldecott Tunnel Ballfields-PDM. Effect partially mitigated by implementation of unified methodology. Reduced potential for devastating impact to residential communities and businesses due to wildfire. No disproportionate adverse effect on environmental justice populations.
Health and Human Safety	Greater potential for injury and adverse health effects caused by wildfires.	Potential adverse health effects of herbicides on vegetation management workers, nearby residents, and users of parks and open space, mitigated by restrictions on herbicide use and BMPs. Not significant with mitigation and BMPs.

Resource Category	No Action Alternative	Proposed and Connected Actions
Public Services, Utilities, and Recreation	Greater potential for disruption of public services, destruction of utility infrastructure, destruction of recreational facilities, and increased demand for public safety services during a wildfire.	Temporary restrictions on recreational use of trails. Short-term, insignificant, adverse effects. Temporary closure of the Upper Jordan Fire Trail would have a temporary adverse effect on recreational use of the trail. Unavoidable, significant, short-term impact.
Land Use and Planning	No effect	No effect
Transportation	Greater potential for disruption of transportation by wildfires	Road closures for up to 30 minutes due to movement of construction equipment. Insignificant impact on traffic and transportation. Temporary closure of the Upper Jordan Fire Trail would have a temporary adverse effect on recreational use of the trail. Unavoidable, significant, short-term impact.
Noise	No effect	Significant, unavoidable, temporary adverse impact due to use of construction equipment within the project areas and at the homes closest to many of the project areas during working hours.

In August 2014, UCB undertook environmental treatment measures on approximately 7.5 acres of the 185.2-acre project area at Frowning Ridge. According to UCB, they felled 150 eucalyptus, Monterey pine, and acacia trees, and applied an herbicide to eucalyptus and acacia stumps. In undertaking these actions prior to issuance of the final EIS, UCB failed to comply with both the specific conditions of the grant and also the NEPA requirement which limits applicant action during the NEPA process under 40 CFR 1506.1. Both required UCB to refrain from action until FEMA had completed its environmental review. As a result, the Frowning Ridge project area is no longer eligible for PDM program grant funding.

Nonetheless, the environmental analysis of the impacts of the proposed action at Frowning Ridge has not been removed from the final EIS because it is part of the review and consideration that FEMA has undertaken in concluding whether to fund the proposed actions. FEMA will continue to work with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to determine whether UCB's unauthorized work at Frowning Ridge negatively affects UCB's other projects at Strawberry Canyon and Claremont Canyon and will make further decisions regarding these projects in the Record of Decision.

ES.9 Summary Conclusions

Consultations and agency coordination required under other federal laws has concluded. Section 106 coordination on historic properties under the National Historic Preservation Act concluded in April 2013 with the California State Historic Preservation Officer concurrence that there would be no adverse effect from the proposed and connected actions. There would be no effect on Native American cultural resources and there are no federally recognized Native American tribes with a cultural affiliation to the proposed and connected project areas.

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Section 7 consultation under the Endangered Species Act concluded with the issuance of a Biological Opinion (BO) from the USFWS in May 2013 and a letter of concurrence with a “not likely to adversely affect” determination from NMFS in April 2013. The terms and conditions of the BO are described in Sections 5.1 and 5.10 and the BO is included in Appendix P.

The proposed and connected actions would be in compliance with EO 12898 on Environmental Justice as there would not be a disproportionate adverse effect on low income or minority populations.

As described in Section ES.8, unavoidable adverse impacts would occur with respect to vegetation, wildlife and habitats, protected species, soils, water quality, aesthetics, community character, human health and safety, recreation, and noise. Required BMPs and mitigation measures are described in Section 5 under each resource area and implementation of the mitigation measures would result in less than significant impacts with the following exceptions. With implementation of BMPs and mitigation measures, significant adverse impacts would remain only with respect to wildlife, aesthetics, community character, and noise.

Significant wildlife impacts would be short-term and limited to common wildlife species, which would be disrupted during implementation and until vegetation communities recover. In the long-term, the proposed and connected actions may benefit wildlife species by providing more habitat composed of native plant species. Significant adverse visual impacts would occur in two areas in Tilden Regional Park. Two neighborhoods would experience significant alteration of community character; although, the implementation of the unified methodology would lessen the severity of this effect somewhat because the action is spread over 10 years. At times when several pieces of heavy equipment are operating simultaneously, significant noise impacts would occur within the project areas and at the homes closest to many of the project areas. This impact would be of relatively short duration and limited to normal working hours.